

TRAFFIC SPEED REPORT

NO. 71

NOVEMBER, 1960

NO. 18



Joint Highway Research Project

by

F.D. MILLER

PURDUE UNIVERSITY
LAFAYETTE INDIANA

Progress Report
TRAFFIC SPEED REPORT NO. 71

TO:	K. B. Woods, Director Joint Highway Research Project	November 2, 1960
FROM:	H. L. Michael, Assistant Director Joint Highway Research Project	File: 8-3-3 Project: C-36-10C

Attached is the 71st progress report on vehicle speeds which has been prepared by this Project. The current report "Traffic Speed Report No. 71" has been authored by Forrest D. Miller, graduate assistant on our staff.

The results of this latest study indicate a continuation of the increasing speed trend for free-moving vehicles on level, tangent sections of rural highway.

This report is also scheduled for distribution to the Bureau of Public Roads, the Indiana State Police, the Indiana Office of Traffic Safety and the Traffic Engineering and Planning sections of the State Highway Department of Indiana.

The report is presented for the record and for release for distribution.

Respectfully submitted,

Harold L. Michael

Harold L. Michael, Secretary

HLM:kmc

Attachment

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Progress Report

TRAFFIC SPEED REPORT NO. 71

by

Forrest Miller
Graduate Assistant

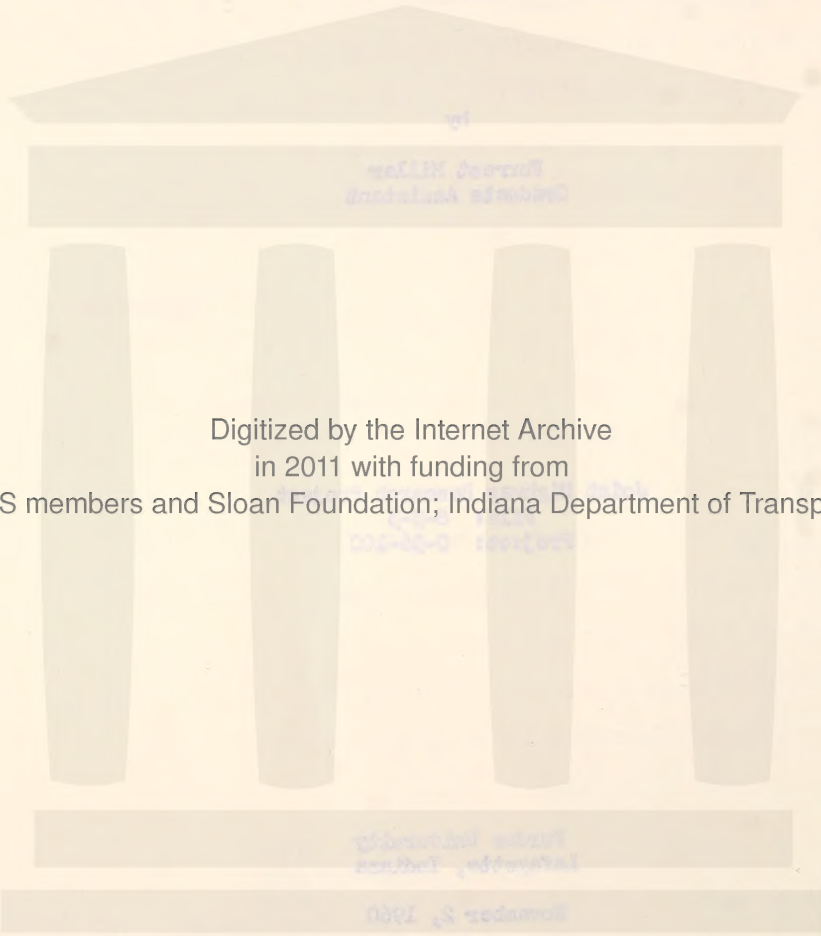
Joint Highway Research Project

File: 8-3-3

Project: C-36-100

Purdue University
Lafayette, Indiana

November 2, 1960



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TRAFFIC SPEED REPORT NO. 71

This report covers spot speed observations made during August and September 1960. All observations were made of free moving vehicles on level tangent sections of rural highways. The locations of the stations were the same as for previous studies and are as follows:

1. U.S. 52 - 1.0 mile south of south junction of S.R. 28
(dual lanes)
2. U.S. 52 - 1.0 mile west of Klondike (dual lanes)
3. U.S. 52 - 2.2 miles northwest of Templeton (2 lanes)
4. U.S. 31 - 7.2 miles north of Perrysburg (2 lanes)
5. S.R. 25 - 0.7 mile south of Americus (2 lanes)
6. U.S. 41 - 1.0 mile north of Boswell (2 lanes)

An Electromatic Radar Speed Meter was used to collect the data for this study. The meter was concealed as part of a rural mailbox and placed near the edge of the pavement. It was directed along the highway at a small angle with respect to the direction of traffic so that it was not necessary to make angle corrections to the readings.

The radar equipment used will not operate properly if the voltage varies more than minus 1/2 volt or plus 1 volt from the optimum twelve volts. The voltage was therefore checked periodically in the field and maintained within the desired range. Also, correct calibration was maintained by periodically checking it with a 60 mile per hour tuning fork.

The observers concealed themselves from traffic as much as local conditions permitted. It is thus believed that the speeds of

the observed vehicles were not influenced by the observer or the equipment.

A summary of the results of this study, as well as of the last seven studies, is given in Table I. Indiana State law limits the speed of passenger cars and trucks under 5,000 pounds (GVW) to 65 miles per hour. The speed limit of trucks over 5,000 pounds (GVW) is 50 miles per hour on all highways except those on 4-lane highways, which have a median strip of at least twenty feet in width, the speed limit is 55 miles per hour. This latter speed limit for trucks has been in effect since about May 1959. Most truck speed limit signs posted along the state highways reflect this change and it is probable that a large portion of the truck drivers are aware of this speed limit change.

Truck speeds are shown in the tables for three groups: light trucks, heavy trucks, and all trucks. Speeds are also shown separately for 3-lane and 4-lane highways. All 4-lane observation stations were on highways with a median of greater than twenty feet. Since weights were not taken in this study, light trucks (less than 5,000 pounds) were considered to be only panel trucks and pick-up trucks. All other types of trucks were classified as heavy (over 5,000 pounds).

The passenger car data were also classified into three groups: Indiana, out of state, and all passenger cars. The classification was determined by observing the license plate on each passenger car passing the observation stations.

A comparison between the results of the present study and those of the last previous study (March-April 1950) is presented in Tables II through VII. Average and 95th percentile speeds were computed for each vehicle group from the sample of vehicles taken at each study site.

The average speed for all passenger cars was 1.4 miles per hour faster than that obtained in the last study while average speeds for all trucks was 2.7 miles per hour higher than in March-April 1960. Indiana passenger cars had an average speed on 2-lane highways 2.4 miles per hour faster while their average speed on 4-lane highways increased by 1.4 miles per hour. Out-of-state passenger cars increased their average speed on 2-lane highways by 0.8 miles per hour while their average speed on 4-lane highways increased by 1.0 mile per hour.

The average speed for light trucks increased by 4.5 miles per hour on 2-lane highways and 2.4 miles per hour on 4-lane highways. For heavy trucks the average speed increased by 2.2 miles per hour on 2-lane highways and 4.0 miles per hour on 4-lane highways.

The 85th percentile speed for all passenger cars increased 0.7 mile per hour.

Trend information on the average speeds of passenger cars and trucks and on the 85th percentile speed for passenger cars is shown in Table I and Figure 7 and 8. Table I is a summary of spot speed observations on Indiana highways for the last eight studies (since August 1956). This summary lists the observations for two-lane highways, four-lane highways, and all highways for both passenger cars and trucks.

Figure 7 is a graph showing rural speed trends from 1942-1960 for both passenger cars and trucks.

Figure 8 is a graph showing trends in percentile speeds and speed differential from 1949-1960 for both passenger cars and heavy trucks. The speed differential is the difference between the 85th percentile of passenger cars and 15th percentile of heavy trucks.

TABLE 1

SUMMARY OF SPOT SPEED OBSERVATIONS
ON INDIANA HIGHWAYS

(Free-Moving Vehicles on Level, Tangent Sections)

		Passenger Cars				Trucks		
		Ind Mean	Non-Ind Mean	All Mean	All 85 per	Light Mean	Heavy Mean	All Mean
Two-Lane Highways	Aug. '56	55.0	56.3	55.5	63.4	50.6	45.5	46.6
	May '57	55.6	59.1	56.9	64.0	50.2	44.8	46.1
	Aug. '57	55.5	56.7	55.9	62.1	51.7	45.8	47.3
	Aug. '58	54.3	56.3	55.0	61.7	53.0	46.3	47.0
	Mar. '59	55.5	57.7	56.3	61.9	50.4	45.4	46.3
	Aug. '59	55.6	55.3	55.9	63.2	49.7	46.7	48.0
	Mar. '60	53.3	54.8	53.7	61.2	48.5	45.9	46.6
	Sept. '60	55.7	55.6	55.6	62.0	53.0	48.1	49.3
Four-Lane Highways	Aug. '56	57.4	58.8	58.2	66.8	49.6	46.0	47.4
	May '57	59.9	63.6	61.0	69.0	52.2	46.0	47.9
	Aug. '57	57.5	59.9	58.5	64.8	52.0	46.6	47.6
	Aug. '58	58.0	59.6	58.7	65.0	54.3	49.0	50.0
	Mar. '59	58.2	61.7	59.0	64.9	53.6	47.0	48.4
	Aug. '59	58.4	60.1	59.1	64.5	50.0	53.1	49.5
	May, '60	58.1	59.8	58.4	65.0	52.4	47.3	48.4
	Sept. '60	59.5	60.2	59.7	65.8	54.8	51.3	52.0
All Highways	Aug. '56	55.7	57.5	56.8	64.5	50.2	45.6	46.9
	May '57	57.2	60.3	58.3	66.0	50.9	45.2	46.6
	Aug. '57	56.2	58.3	56.9	63.2	51.8	46.1	47.4
	Aug. '58	55.7	57.9	56.5	63.1	53.4	47.5	48.7
	Mar. '59	56.6	59.0	57.2	63.1	51.5	45.9	47.0
	Aug. '59	56.5	58.4	57.4	63.5	50.6	47.8	48.6
	Mar. '60	55.6	57.1	56.0	63.0	50.2	46.6	47.5
	Sept. '60	57.3	57.6	57.4	63.7	53.7	49.4	50.2

II

1.0 mile south of south junction of S.R. 28 on U.S. 52

1. Lane divided - 2' bituminous concrete

Weather Warm and Clear

This observation

Last Previous Observation (Speed Report No. 69)

Date August 31, 1960

Date April 3; April 6; April 8, 1960

Time 1:50 - 4:45 p.m.

Time 2:15 - 2:55 p.m.; 1:35 - 3:30 p.m.; 2:45 - 4:00

[illegible]

III

This Observation

Date Aug. 30, 1960, Sept. 2, 1960

[illegible]

TABLE:

station 2.2 miles northwest of Templeton on U. S. 52

Surface 2 lane - 22' Bituminous Concrete

This Observation

Date Sept. 1, 1960

Time 2:00 - 3:40 PM

Weather Warm and Clear

Last Previous Observation (Speed Report No. 69)

Date March 25, 1960

Time 3:30 - 5:00 PM

[illegible]

TABLE V SPEED DATA

Station 7.2 miles north of Perrysburg on U. S. 31

Surface 2 lane - 22' Bituminous Concrete

This Observation

Date Sept. 6, 1960

Time 11:20-12:30 AM - 1:15-2:40 PM

Last Previous Observation (Speed Report No. 69)
Date March 29, 1960
Time 12:45-4:15 PM

Weather Warm and Clear

PASSENGER CARS										TRUCKS						BUSES		
OBSERVATION	All			Indiana			Non-Indiana			All			Less than 5000 pounds			5000 pounds or more		All Present
	Last	Present		Last	Present		Last	Present		Last	Present		Last	Present		Last	Present	
No. of Vehicles Obs.	299	344		246	270		53	74		102	36		26	25		76	61	---
Ave. Speed (m.p.h.)	52.3	56.0		52.5	55.4		54.3	53.2		47.0	49.9		50.2	53.1		45.9	43.6	---
45 m.p.h.	---	---		---	---		---	---		---	---		---	---		---	---	---
50 m.p.h.	71.0	82.3		66.5	79.3		81.4	93.3		59.8	79.1		96.0	30.0		92.0	73.7	---
55 m.p.h.	41.0	57.9		40.7	55.9		37.2	64.9		40.2	53.2		73.0	63.0		55.0	54.1	---
60 m.p.h.	23.0	30.5		23.0	31.5		9.3	27.1		8.8	19.3		62.0	36.0		33.0	13.2	---
65 m.p.h.	5.0	9.4		6.4	9.3		2.3	9.5		3.0	7.1		27.0	20.0		3.0	1.6	---
70 m.p.h.	2.0	2.0		2.5	2.2		0.0	1.4		0.0	2.4		8.0	8.0		1.0	0.0	---
75 m.p.h.	0.0	1.2		0.0	1.1		0.0	1.4		0.0	1.2		0.0	4.0		0.0	0.0	---
No. of Vehicles Obs.	156	145		123	119		28	26		54	33		14	10		40	28	---
Ave. Speed (m.p.h.)	54.8	55.5		54.7	54.6		55.4	60		49.3	49.3		51.9	49.3		43.4	49.3	---
Max. Speed (m.p.h.)	---	---		72	78		66	64		---	---		53	53		56	56	---
State or Type	---	---		---	---		---	---		---	---		---	---		---	---	---
Min. Speed (m.p.h.)	---	---		34	32		40	46		---	---		40	33		42	30	---
State or Type	---	---		---	---		---	---		---	---		---	---		---	---	---
No. of Vehicles Obs.	143	199		113	151		25	48		43	48		12	15		36	33	---
Ave. Speed (m.p.h.)	50.6	56.3		50.1	56		53.0	57.3		44.4	50.4		43.2	55.7		43.2	43	---
Max. Speed (m.p.h.)	---	---		70	80		64	78		---	---		60	80		60	60	---
State or Type	---	---		---	---		---	---		---	---		---	---		---	---	---
Min. Speed (m.p.h.)	---	---		30	40		36	40		---	---		32	42		26	34	---
State or Type	---	---		---	---		---	---		---	---		---	---		---	---	---

SPEED DATA

Time 9:00-11:30 AM

Time 2:45-4:20 PM

[illegible]

Weather Warm and Clear
Last Previous Observation (Speed Report No. 69)
Date April 12, 1960
Time 2:45-5:00 PM

ervation
Date Sept. 1, 1960
Time 10:20-1:05 PM

OBSERVATION	all			Indiana			Ind.-Indiana			Ind.-Ind.			5000 pounds or more			less than 5000 pounds			all			
	Last	Present	all	Last	Present	all	Last	Present	all	Last	Present	all	Last	Present	all	Last	Present	all	Last	Present	all	
No. of Vehicles reg.	255	282		149	116	106	166	104	109	31	17	73	92	45.3	47.6	31	17	47.0	47.6	45.3	47.6	31
Ave. Speed (m.p.h.)	52.6	51.7		51.8	51.6	53.7	51.8	45.8	45.9	47.0	47.6	45.3	45.6	45.3	47.6	45.3	45.9	47.0	47.6	45.3	47.6	45.3
Max. Speed (m.p.h.)	71	64.2		67.0	65.6	76.5	63.3	54.0	60.6	48	53.8	56	60.9	56	60.9	56	60.9	48	53.8	56	60.9	56
State of Type	42	33.0		33.0	31.9	48.0	33.8	31.0	33.0	35	41.2	29	31.5	29	31.5	35	41.2	35	41.2	29	31.5	29
Max. Speed (m.p.h.)	18	11.6		15.0	10.5	23.0	10.9	8.0	8.2	19	23.6	3	5.5	3	5.5	19	23.6	19	23.6	3	5.5	3
State of Type	4	2.5		3.0	1.7	5.0	3.0	4.0	0.9	13	0.0	0.0	1.1	0.0	0.0	13	0.0	13	0.0	0.0	0.0	0.0
Max. Speed (m.p.h.)	2	0.0		1.0	0.0	2.0	0.0	2.0	0.0	6	0.0	0.0	0.0	0.0	0.0	6	0.0	6	0.0	0.0	0.0	0.0
State of Type	0.0	0.0		0.0	0.0	0.0	0.0	1.0	0.0	3	0.0	0.0	0.0	0.0	0.0	3	0.0	3	0.0	0.0	0.0	0.0
No. of Vehicles reg.	148	123		76	49	72	74	47	53	15	6	32	47	43.5	44.9	15	6	47.2	44.9	43.5	44.9	15
Ave. Speed (m.p.h.)	53.5	53.7		52.5	53.5	54.6	53.8	44.6	44.9	47.2	44.8	43.5	44.9	43.5	44.9	47.2	44.8	47.2	44.9	43.5	44.9	43.5
Max. Speed (m.p.h.)	70	68		70	68	72	66	44.6	44.9	47.2	44.8	43.5	44.9	43.5	44.9	47.2	44.8	47.2	44.9	43.5	44.9	43.5
State of Type	34	32		34	32	38	40	36	36	30	36	30	32	30	32	36	36	36	30	32	30	32
Max. Speed (m.p.h.)	73	67		73	67	76	66	57	56	16	11	41	45	41	45	16	11	46.9	49.0	46.7	46.4	41
State of Type	51.3	50.2		51.1	50.2	51.7	50.3	46.8	46.9	46.9	49.0	46.7	46.4	46.7	46.4	46.9	49.0	46.9	49.0	46.7	46.4	41
Max. Speed (m.p.h.)	70	60		70	60	64	66	60	60	60	58	56	56	56	56	60	58	60	58	56	56	56
State of Type	32	40		32	40	38	36	36	36	36	38	34	30	34	30	36	38	36	38	34	30	30
Max. Speed (m.p.h.)	107	159		107	159	107	159	107	159	107	159	107	159	107	159	107	159	107	159	107	159	107
State of Type	51.3	50.2		51.1	50.2	51.7																

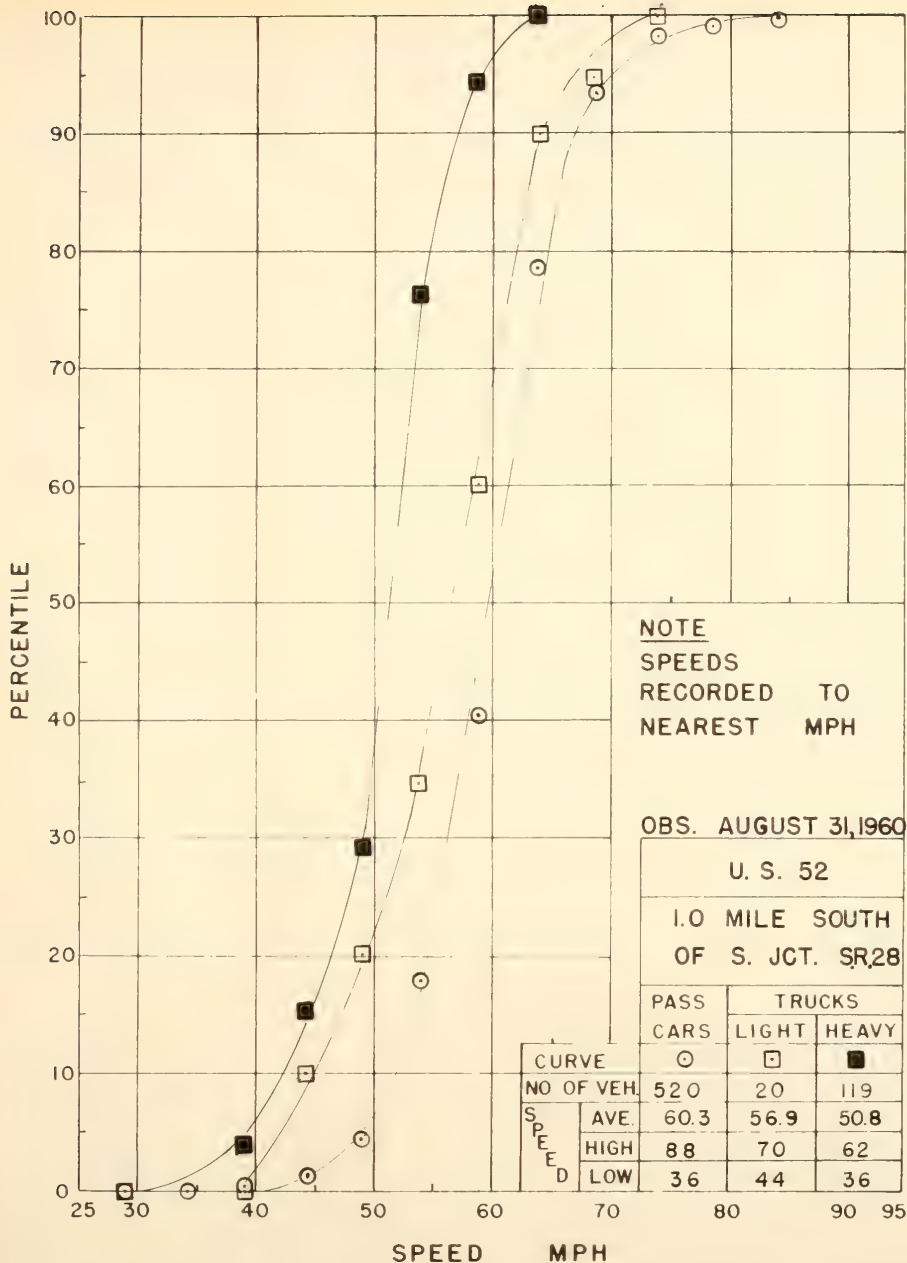


FIGURE 1

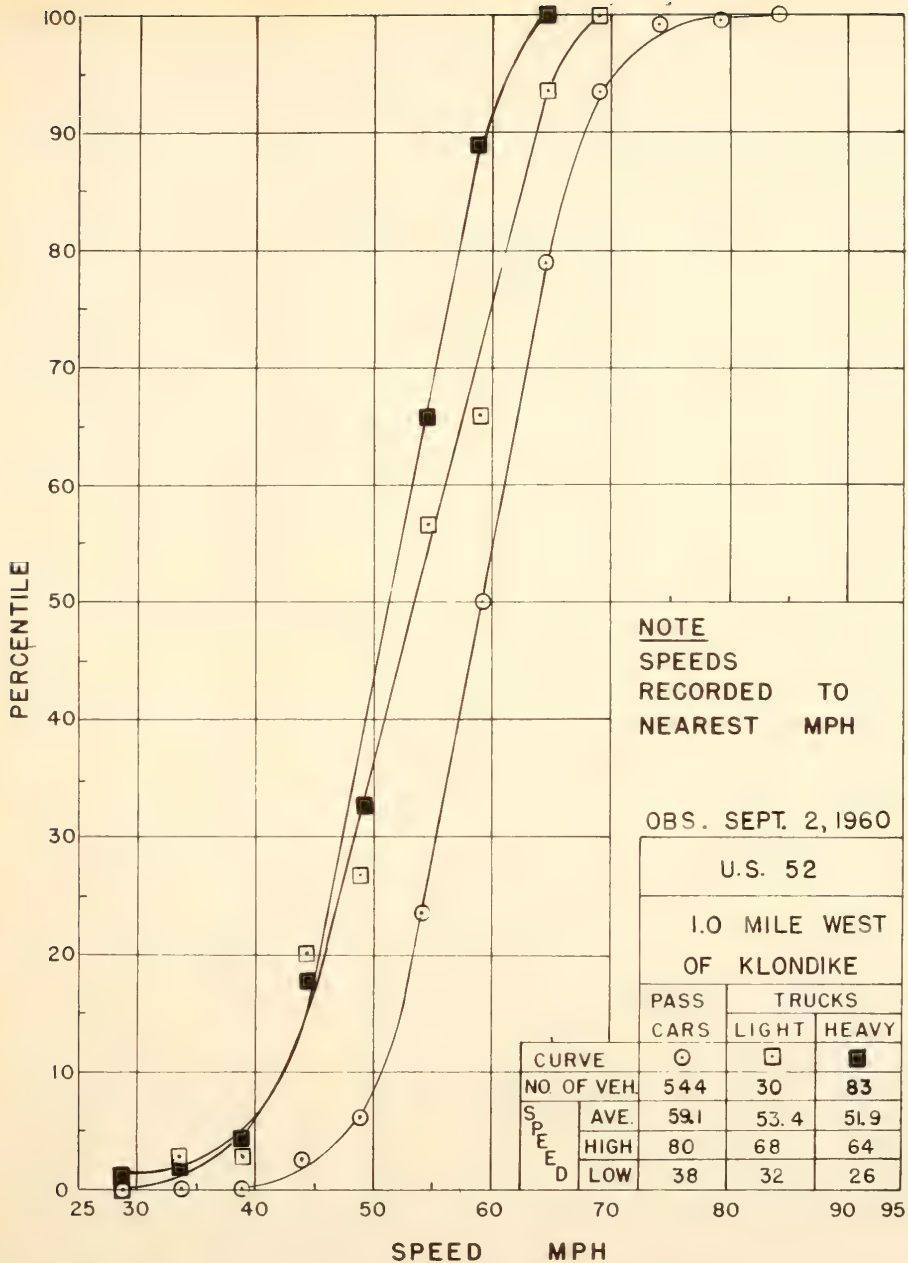


FIGURE 2

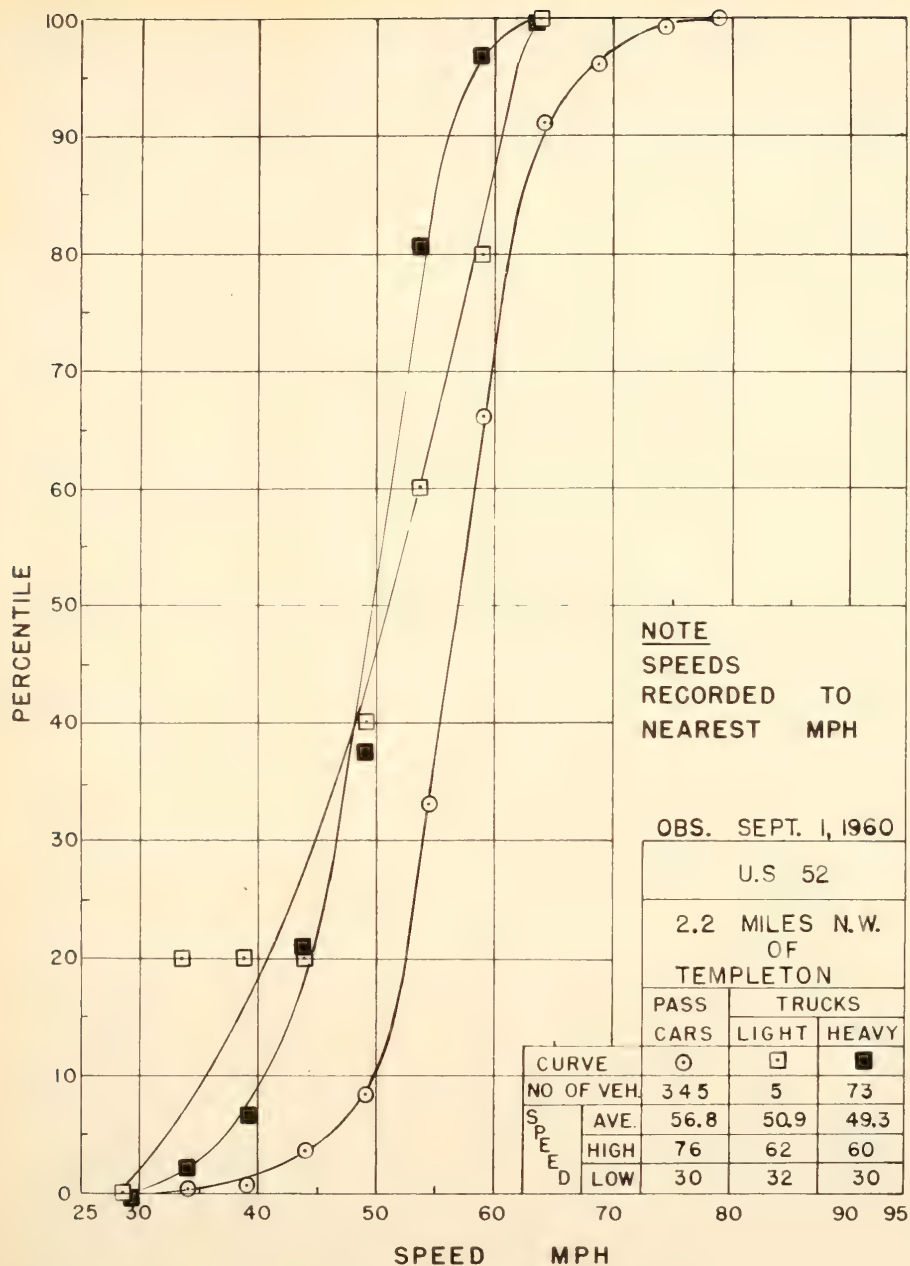


FIGURE 3

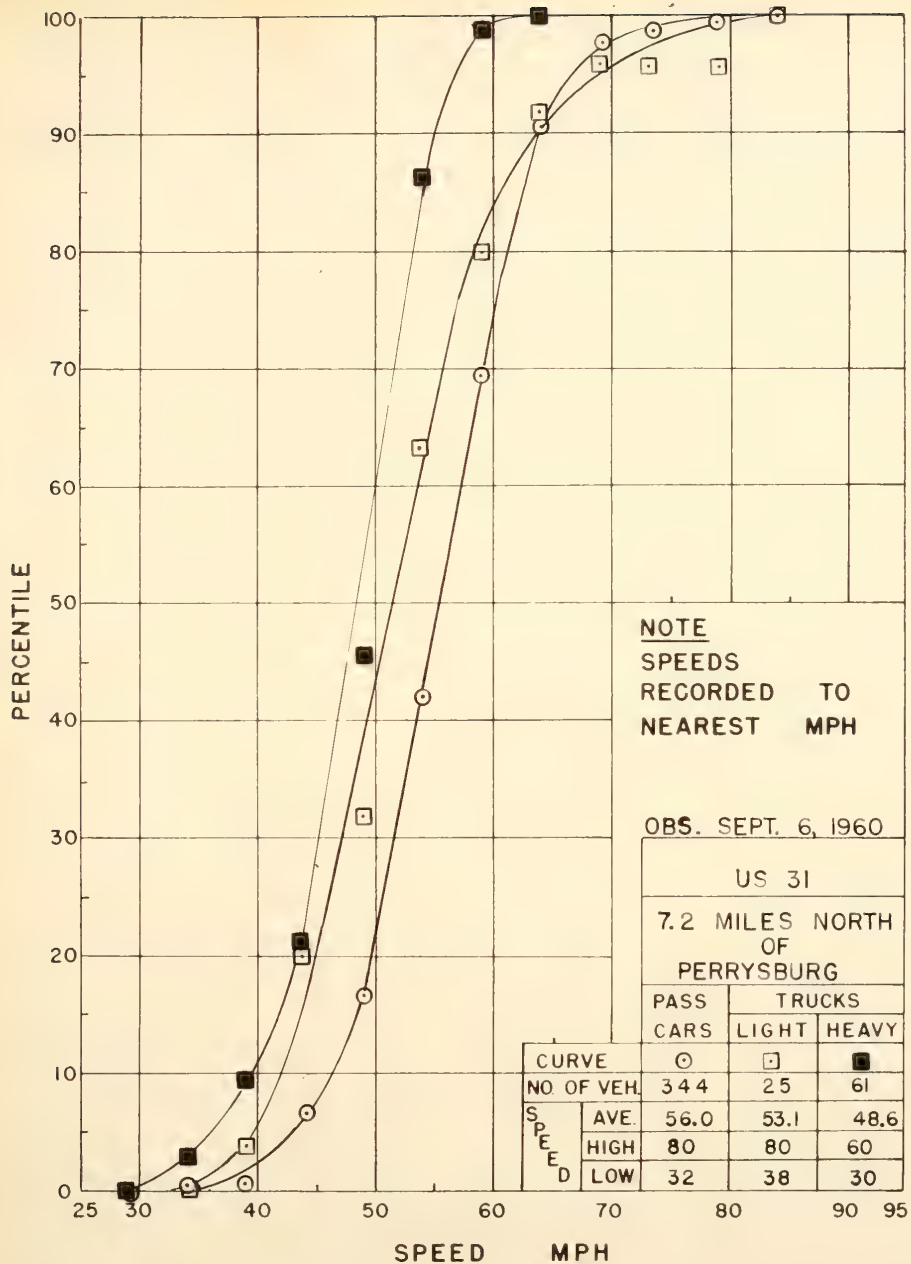


FIGURE 4

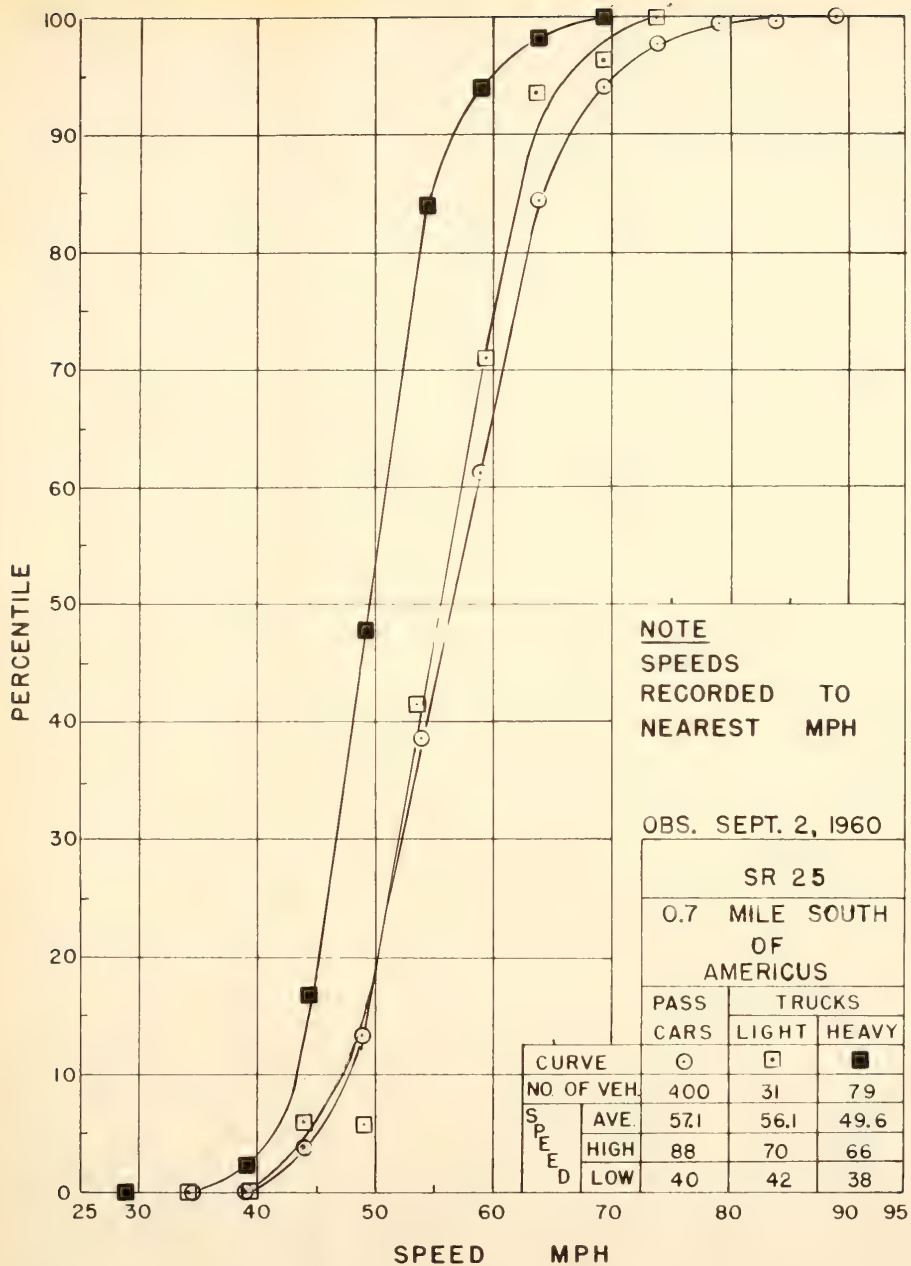


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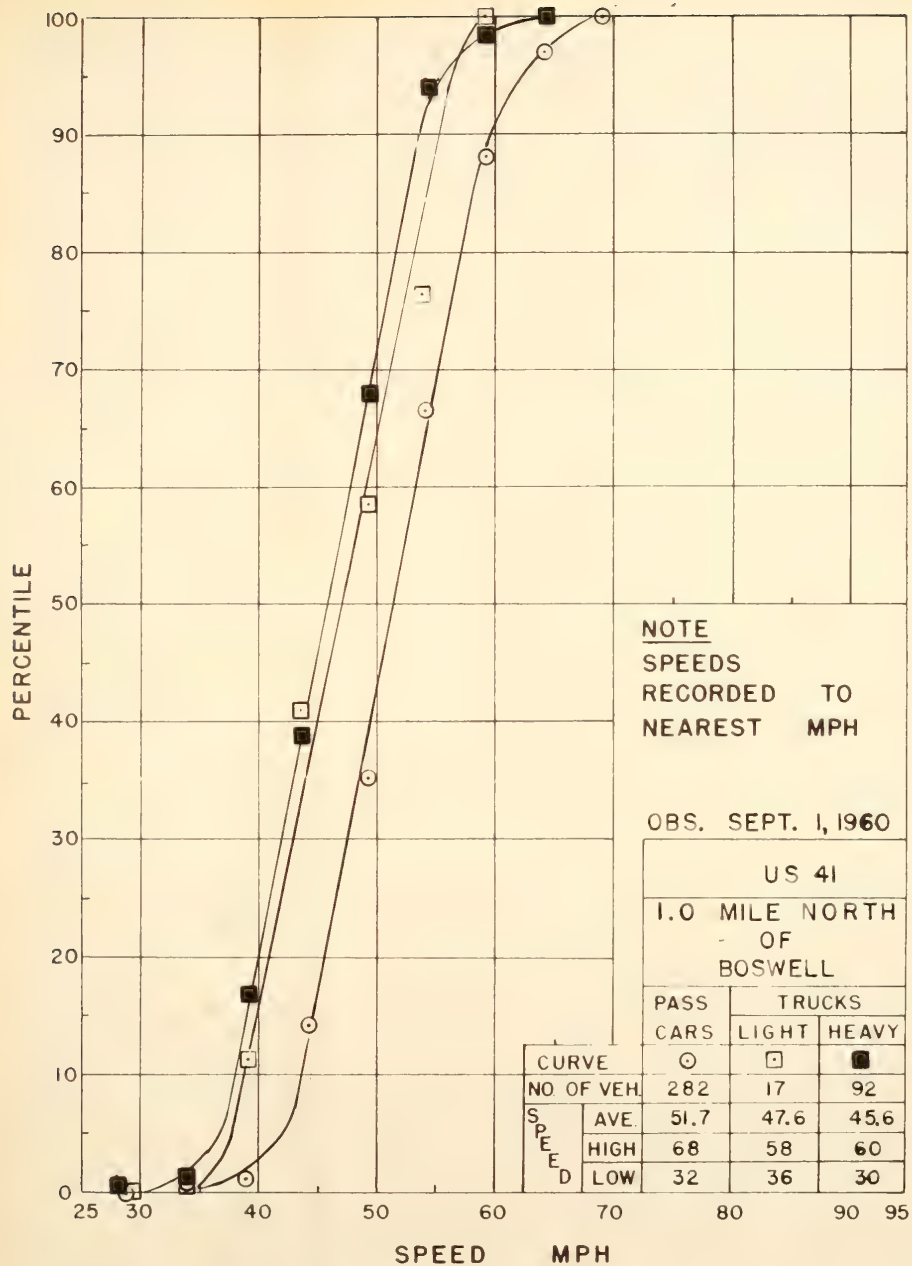


FIGURE 6

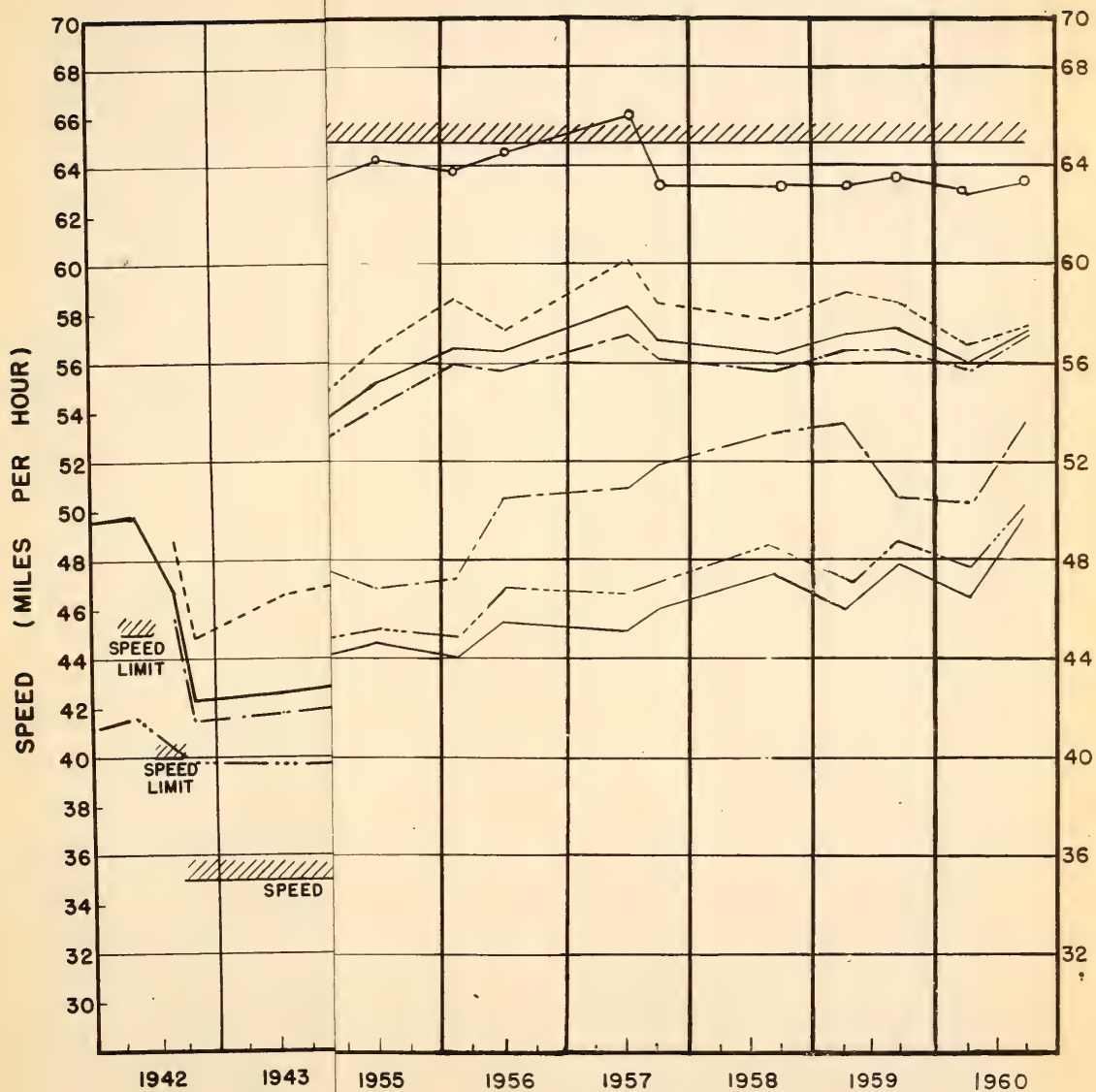
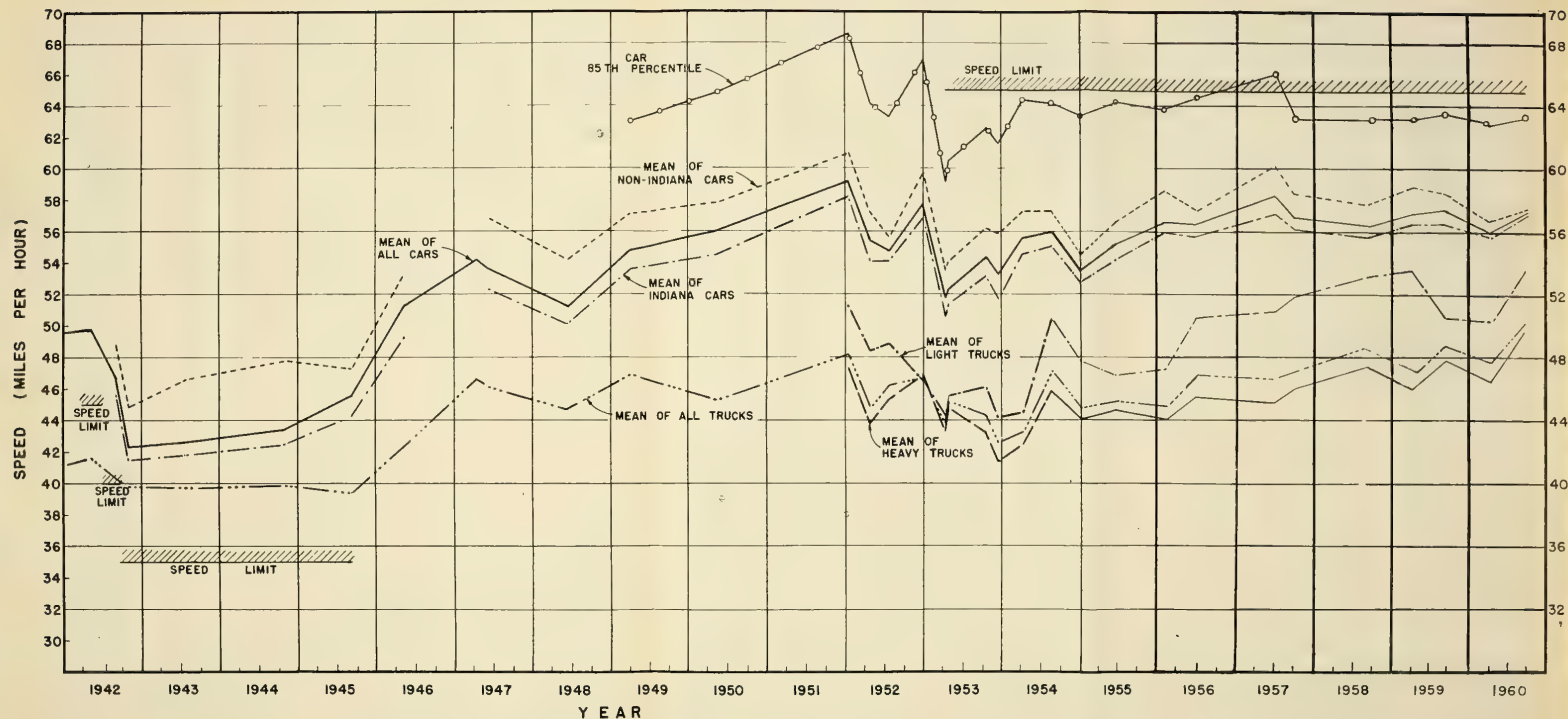
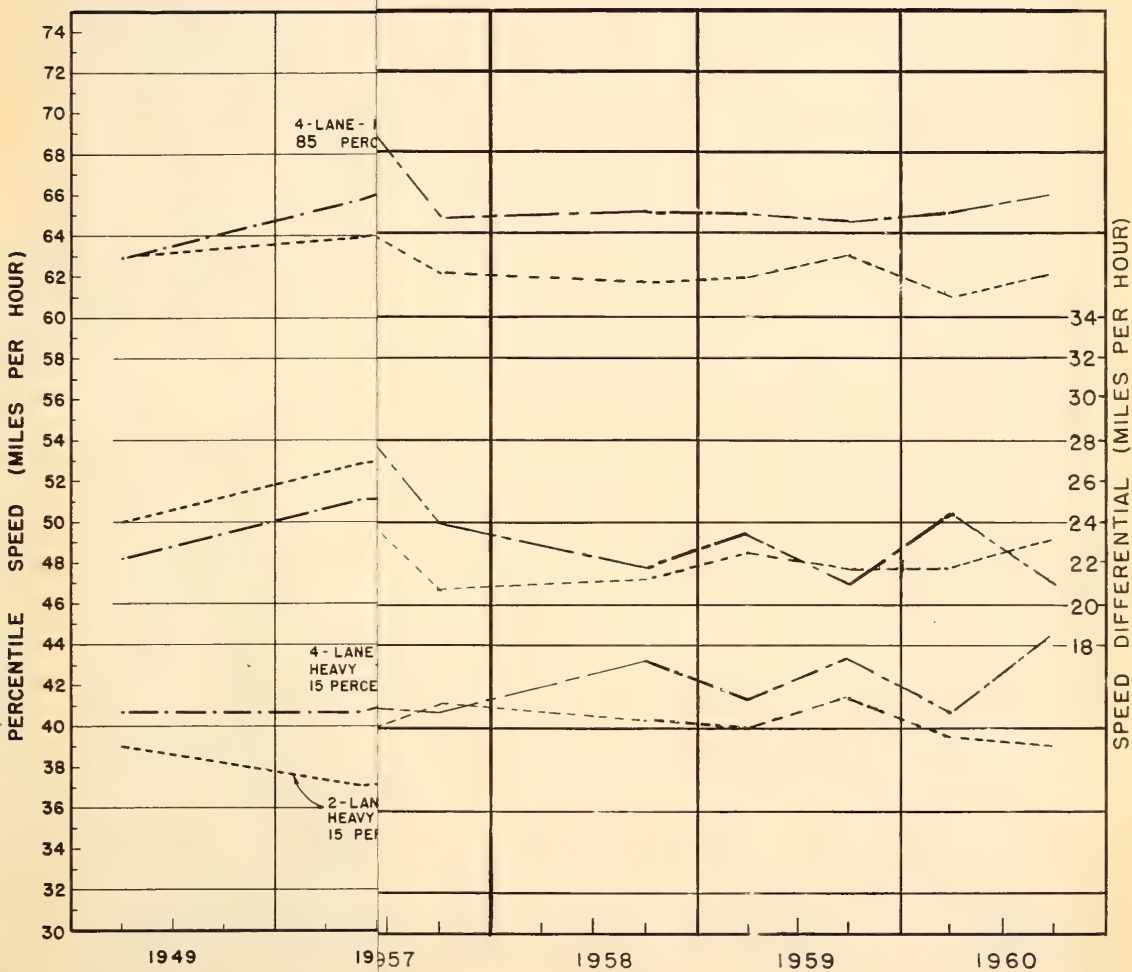


FIG. 7



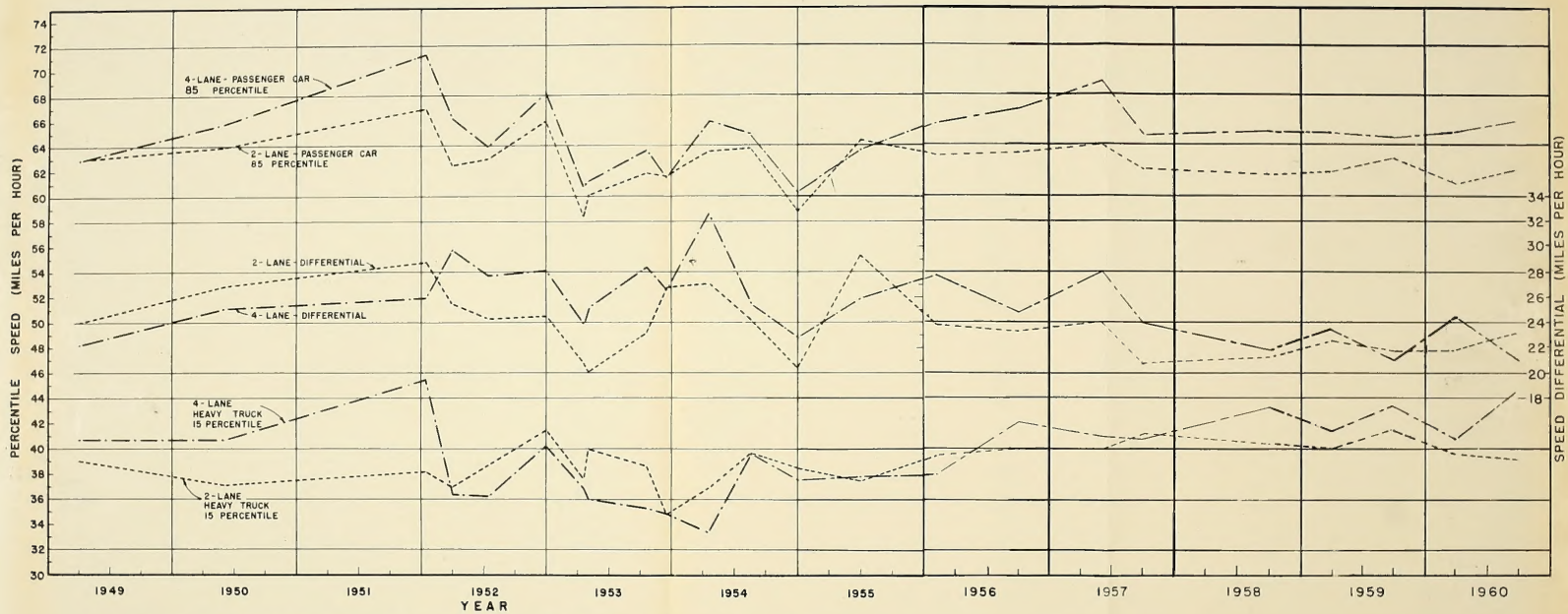
INDIANA RURAL SPEED TRENDS 1942—1960

FIG. 7



TRENDS IN

FIG. 8



TRENDS IN PERCENTILE SPEEDS AND SPEED DIFFERENTIAL 1949—1960

